Amendments to the Specification:

Please substitute the paragraph at page 2, line 7 (the "4" should not be underlined) with the following:

(previously amended) There are drawbacks, however, with such one-dimensional gratings, particularly with regard to the directionality of the output light. The direction of the output light naturally affects how well the light may be coupled into receivers or other devices, *e.g.*, planar waveguides and fibers. Both one-dimensional grating couplers and focusing grating couplers have periodicity in a single spatial direction. One-dimensional GCs have straight grooves, whereas focusing GCs, also called grating lenses, have a curvelinear grating. The direction of light output from a coupler is determined by phase-matching the scattered wave to the guided wave. As shown in Fig. 1A, a one-dimensional grating couplers e.g. 1 couple light to a cylindrical wave, necessitating the use of additional optics to direct the light into a fiber. As shown in Fig. 1B, focussing grating couplers e.g. 3 focus light to a point ~~4~~ 4 in space in the vicinity of the grating at a distance on the order of the grating size. With focusing couplers, a receiver may only be placed at a certain fixed distance from the coupler, and in the far field, light is coupled to a spherical wave.

Please substitute the paragraph at page 6, line 18 with the following:

With the two-dimensional grating coupler, a core region is disposed between two cladding regions, in which the core region receives light from a first device and outputs light to a second device, i.e., the index of refraction of the core relative to the cladding is such that there is internal reflection of light at the core. As shown in Fig. 2, in a two dimensional grating coupler 5, 6, the ~~The~~ core region has a grating formed in two-dimensions. Introduction of periodicity in this additional spatial direction increases the number of constraints on the output angles. Light is then-coupled out into a single or a number of discrete directions, as schematically illustrated in FIG. 2. In other words, light is not output in a cylindrical or spherical wave, as with the one-dimensional GCs of the prior art (e.g., as in FIGS. 1A-1B), but rather, it is unidirectional or follows a plurality of discrete paths. The two-dimensional coupler is a dramatic improvement over traditional grating couplers in coupling directionality.

Please substitute the paragraph at page 13 line 10 with the following:

A single one-dimensional photonic crystal laser (e.g., DBR laser), may be integrated with the two-dimensional coupler. For example, FIG. 6A is a schematic cross-sectional side view of the coupler integrated with a laser. The waveguide laser 30 has a core region 32 comprised of a material having a first index of refraction surrounded by cladding layers 34a, 34b having a second index of refraction lower than the first so that light pumped into the core region 32 will be guided therein (e.g., along the guided mode 35), by total internal reflection. Within the core region 32 of the laser is fabricated a one-dimensional grating 36. The laser 30 is joined with coupler 40, having core region 42,cladding regions 44a, 44b, and a two-dimensional grating 46 formed in the core.

Please substitute the paragraph at page 15 line 1 with the following:

The two-dimensional photonic crystal coupler also may be ensconced within the one-dimensional laser structure. In other words, the coupler can be fabricated as a "defect" in a one-dimensional photonic crystal laser, and the gratings of the one-dimensional photonic crystal laser function as mirrors which create a "resonant cavity coupler." For example, ~~[FIG. 7B shows the index modulation pattern of the composite device where]~~ the two-dimensional photonic crystal coupler can be ensconced between two DBR mirrors. In this case, the two-dimensional coupler is formed with a square lattice. The width of the waveguide (which runs substantially perpendicular to the Bragg mirrors) can be reduced to dimensions that are sufficiently small to function in single mode. The dimension of the waveguide will depend on the wavelength and materials. For example, at a wavelength of 700 nm, a III-IV semiconductor laser can function as a single-mode laser when the width of the waveguide is about 2-3 microns, wherein the "width" denotes the dimension perpendicular to the direction of light propagation and parallel to the plane of the layers (core, cladding, etc.) (*e.g.*, illustrated in FIG. 6A with reference "*w*").